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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/505,169	08/30/2004	Toshio Takagi	258108US3PCT	6672
22850	7590	07/18/2008		
OBLON, SPIVAK, MCCLELLAND MAIER & NEUSTADT, P.C. 1940 DUKE STREET ALEXANDRIA, VA 22314			EXAMINER ZERVIGON, RUDY	
			ART UNIT 1792	PAPER NUMBER
			NOTIFICATION DATE 07/18/2008	DELIVERY MODE ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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<b>Office Action Summary</b>	<b>Application No.</b> 10/505,169	<b>Applicant(s)</b> TAKAGI ET AL.	
	<b>Examiner</b> Rudy Zervigon	<b>Art Unit</b> 1792	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 12 May 2008.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-16, 21-27 and 36-46 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-16, 21-27 and 36-46 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)          | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## DETAILED ACTION

### *Continued Examination Under 37 CFR 1.114*

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on May 12, 2008 has been entered.

### *Drawings*

2. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the “a heat ray introducing passage (Applicant’s 112; Figure 14,16) formed through the shower head (Applicant’s 12, Figure 14,16) *and separated from the space formed inside the shower head*” and “the gas introducing passage (16/17; Figure 1) (Applicant’s 118, Figure 16) *being separated from the space formed inside the shower head* (Applicant’s 12, Figure 14,16)”, and “head spaces” must be shown or the features canceled from the claims. No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as “amended.” If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the

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drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

3. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because reference character "112" has been used to designate both "heat ray introducing passage" and "heat ray draining passage". Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

### ***Claim Rejections - 35 USC § 102***

4. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

5. Claims 21-23, 25, and 27 are rejected under 35 U.S.C. 102(b) as being anticipated by Watanabe et al (JP 06204143 A). Watanabe teaches a semiconductor (1; All Figures, [0010]-

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[0011], Machine Translation) processing device (All Figures, [0010]-[0011], Machine Translation) for processing a semiconductor (1; All Figures, [0010]-[0011], Machine Translation) while providing a processing gas into a processing space (7; All Figures, [0010]-[0011], Machine Translation) accommodating a heated (3-1, 3-2; All Figures, [0010], Machine Translation; Abstract) substrate (1; All Figures, [0010]-[0011], Machine Translation) to be processed, comprising: a processing chamber (7; All Figures, [0010]-[0011], Machine Translation) forming the processing space (7; All Figures, [0010]-[0011], Machine Translation) and capable of being pumped in vacuum; a susceptor (4; All Figures, [0010]-[0011], Machine Translation) for mounting the substrate (1; All Figures) in the processing chamber (7; All Figures, [0010]-[0011], Machine Translation); a heater (3-1, 3-2; All Figures, [0010]-[0011], Machine Translation) for heating the substrate (1; All Figures) on the susceptor (4; All Figures, [0010]-[0011], Machine Translation); a shower head (volume between bottom of 14 and top of 8; Figure 1) including a plurality of gas injection holes (14; All Figures, [0010]-[0011], Machine Translation) and a space formed therein, thereby providing the processing gas to the gas injection holes (14; All Figures, [0010]-[0011], Machine Translation) through the space (volume between bottom of 14 and top of 8; Figure 1) formed therein, the shower head (volume between bottom of 14 and top of 8; Figure 1) being installed at a ceiling (top of 7; Figure 1) of the processing chamber (7; All Figures, [0010]-[0011], Machine Translation); a heat ray introducing passage (14 accommodating radiation from 5; Figure 1) formed through the shower head (volume between bottom of 14 and top of 8; Figure 1) and separated<sup>1</sup> from the space (volume between bottom of 14 and top of 8; Figure 1) formed inside the shower head (volume between bottom of 14 and top

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<sup>1</sup> See drawing objection. Compare to Applicant's Figure 14.

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of 8; Figure 1); a radiation thermometer (5; All Figures, [0010]-[0011], Machine Translation; “pyrometer”; abstract) facing through a measurement window (8; All Figures; [0010]; Machine Translation) at an upper opening part of the heat ray introducing passage (14 accommodating radiation from 5; Figure 1); and a gas introducing passage (16/17; Figure 1) formed inside the shower head (volume between bottom of 14 and top of 8; Figure 1) and connected to the heat ray introducing passage (14 accommodating radiation from 5; Figure 1) to introduce an additional gas thereinto, the gas introducing passage (16/17; Figure 1) being separated from the space (volume between bottom of 14 and top of 8; Figure 1) formed inside the shower head (volume between bottom of 14 and top of 8; Figure 1) and the additional gas being introduced into the processing space (7; All Figures, [0010]-[0011], Machine Translation) through the heat ray introducing passage (14 accommodating radiation from 5; Figure 1), wherein the additional gas and the processing gas are different, as claimed by claim 21. Applicant’s claim requirement of “an inert gas” and “wherein the additional gas and the processing gas are different” are claim requirements of intended use in the pending apparatus claims. Further, it has been held that claim language that simply specifies an intended use or field of use for the invention generally will not limit the scope of a claim (Walter , 618 F.2d at 769, 205 USPQ at 409; MPEP 2106). Additionally, in apparatus claims, intended use must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim (In re Casey, 152 USPQ 235 (CCPA 1967); In re Otto , 136 USPQ 458, 459 (CCPA 1963); MPEP2111.02).

Watanabe further teaches:

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- i. the device (All Figures, [0010]-[0011], Machine Translation) of claim 21, wherein the additional gas is discharged from a lower end opening of the heat ray introducing passage (14 accomodating radiation from 5; Figure 1) to be diffused while the additional gas is falling toward outside of the susceptor (4; All Figures, [0010]-[0011], Machine Translation); and the heat ray introducing passage (14 accomodating radiation from 5; Figure 1) is spaced apart from a center of the shower head (volume between bottom of 14 and top of 8; Figure 1) such that a position of a main gas stream of the additional gas discharged therefrom falls outside an outer circumference of the substrate (1; All Figures) on the susceptor (4; All Figures, [0010]-[0011], Machine Translation) when the gas stream reaches an identical horizontal level to that of an upper surface of the susceptor (4; All Figures, [0010]-[0011], Machine Translation), as claimed by claim 22. When the structure recited in the reference is substantially identical to that of the claims, claimed properties or functions are presumed to be inherent (In re Best, 562 F.2d 1252, 1255, 195 USPQ 430, 433 (CCPA 1977); MPEP 2112.01).
- ii. The device (All Figures, [0010]-[0011], Machine Translation) of claim 21, wherein a distance between a center of the shower head (volume between bottom of 14 and top of 8; Figure 1) and a center of the upper opening part of the heat ray introducing passage (14 accomodating radiation from 5; Figure 1) is set to range from 70% to 100% of a radius of the substrate (1; All Figures), as claimed by claim 23. Applicant's claim requirement of "is set to range from 70 to 100 of a radius of the substrate" is a claim requirement of intended use in the pending apparatus claims depending on a non-apparatus part of the invention. Further, it has been held that claim language that simply specifies an intended

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use or field of use for the invention generally will not limit the scope of a claim (Walter , 618 F.2d at 769, 205 USPQ at 409; MPEP 2106). Additionally, in apparatus claims, intended use must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim (In re Casey, 152 USPQ 235 (CCPA 1967); In re Otto , 136 USPQ 458, 459 (CCPA 1963); MPEP2111.02).

- iii. The device (All Figures, [0010]-[0011], Machine Translation) of claim 21, further comprising a support member (2,12; [0010]; Machine Translation) having a ring shape, wherein the support member (2,12; [0010]; Machine Translation) has a low thermal conductivity (“cooled jacket”; [0011]; Machine Translation), blocks heat rays emitted from the heater (3-1, 3-2; All Figures, [0010]-[0011], Machine Translation) and supports the susceptor (4; All Figures, [0010]-[0011], Machine Translation) by contacting a peripheral part thereof, as claimed by claim 25
- iv. The device (All Figures, [0010]-[0011], Machine Translation) of claim 21, wherein the one or more gases is introduced to the inert gas introducing passage (16/17; Figure 1), as claimed by claim 27. Applicant’s claim requirement of “wherein the one or more gases is introduced to the inert gas” is a claim requirement of intended use in the pending apparatus claims. Further, it has been held that claim language that simply specifies an intended use or field of use for the invention generally will not limit the scope of a claim (Walter , 618 F.2d at 769, 205 USPQ at 409; MPEP 2106). Additionally, in apparatus claims, intended use must result in a structural difference between the claimed invention



and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim (In re Casey, 152 USPQ 235 (CCPA 1967); In re Otto, 136 USPQ 458, 459 (CCPA 1963); MPEP 2111.02).

### ***Claim Rejections - 35 USC § 103***

6. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

7. Claims 1-5, 8-16, and 34-46 are rejected under 35 U.S.C. 103(a) as being unpatentable over Watanabe et al (JP 06204143 A) in view of Moslehi; Mehrdad M. (US 5846883 A). Watanabe teaches a shower head (volume between bottom of 14 and top of 8; Figure 1) structure for use in a device (All Figures, [0010]-[0011], Machine Translation) for processing a semiconductor (1; All Figures, [0010]-[0011], Machine Translation) while one or more gases is being provided into a processing space (7; All Figures, [0010]-[0011], Machine Translation) accommodating a heated (3-1, 3-2; All Figures, [0010], Machine Translation; Abstract) substrate (1; All Figures, [0010]-[0011], Machine Translation) to be processed, comprising: a shower head (volume between bottom of 14 and top of 8; Figure 1) including a plurality of gas injection holes (14; All Figures, [0010]-[0011], Machine Translation) for providing the one or more gases – claim 1. Applicant's claim requirement of "for providing the one or more gases" is a claim requirement of intended use in the pending apparatus claims. Further, it has been held that claim language that simply specifies an intended use or field of use for the invention generally will not limit the scope of a claim (Walter, 618 F.2d at 769, 205 USPQ at 409; MPEP 2106).

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Additionally, in apparatus claims, intended use must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim (In re Casey, 152 USPQ 235 (CCPA 1967); In re Otto, 136 USPQ 458, 459 (CCPA 1963); MPEP 2111.02).

Watanabe further teaches:

- i. The structure of claim 1, wherein a gas is discharged from a lower end opening of said at least one of the gas injection holes (14; All Figures, [0010]-[0011], Machine Translation) to be diffused while the gas is falling toward outside of a susceptor (4; All Figures, [0010]-[0011], Machine Translation) in the processing space (7; All Figures, [0010]-[0011], Machine Translation); and said at least one of the gas injection holes (14; All Figures, [0010]-[0011], Machine Translation) is spaced apart from a center of the shower head (volume between bottom of 14 and top of 8; Figure 1) such that a position of a main gas stream of the gas discharged from said at least one of the gas injection holes (14; All Figures, [0010]-[0011], Machine Translation) falls outside an outer circumference of the substrate (1; All Figures) on the susceptor (4; All Figures, [0010]-[0011], Machine Translation) when the gas stream reaches an identical horizontal level to that of an upper surface of the susceptor (4; All Figures, [0010]-[0011], Machine Translation), as claimed by claim 4. When the structure recited in the reference is substantially identical to that of the claims, claimed properties or functions are presumed to be inherent (In re Best, 562 F.2d 1252, 1255, 195 USPQ 430, 433 (CCPA 1977); MPEP 2112.01).

- ii. The structure of claim 1, wherein an inert gas is introduced to said at least one of gas injection holes (14; All Figures, [0010]-[0011], Machine Translation) through which said at least one light introducing rod of the radiation thermometer (5; All Figures, [0010]-[0011], Machine Translation; “pyrometer”; abstract) is inserted, as claimed by claim 9. Applicant’s claim requirement of “an inert gas is introduced” is a claim requirement of intended use in the pending apparatus claims. Further, it has been held that claim language that simply specifies an intended use or field of use for the invention generally will not limit the scope of a claim (Walter , 618 F.2d at 769, 205 USPQ at 409; MPEP 2106). Additionally, in apparatus claims, intended use must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim (In re Casey, 152 USPQ 235 (CCPA 1967); In re Otto , 136 USPQ 458, 459 (CCPA 1963); MPEP 2111.02).
- iii. a semiconductor (1; All Figures, [0010]-[0011], Machine Translation) processing device (All Figures, [0010]-[0011], Machine Translation) for processing a semiconductor (1; All Figures, [0010]-[0011], Machine Translation) while one or more gases is being provided into a processing space (7; All Figures, [0010]-[0011], Machine Translation) accommodating a heated (3-1, 3-2; All Figures, [0010], Machine Translation; Abstract) substrate (1; All Figures, [0010]-[0011], Machine Translation) to be processed, comprising: a processing chamber (7; All Figures, [0010]-[0011], Machine Translation) forming the processing space (7; All Figures, [0010]-[0011], Machine Translation) and capable of being pumped in vacuum; a susceptor (4; All Figures, [0010]-[0011], Machine

Translation) for mounting the substrate (1; All Figures) in the processing chamber (7; All Figures, [0010]-[0011], Machine Translation); a heater (3-1, 3-2; All Figures, [0010]-[0011], Machine Translation) for heating the substrate (1; All Figures) on the susceptor (4; All Figures, [0010]-[0011], Machine Translation); a shower head (volume between bottom of 14 and top of 8; Figure 1) provided with a plurality of gas injection holes (14; All Figures, [0010]-[0011], Machine Translation) for supplying the one or more gases is; and a temperature controller (not shown; [0014]; Machine Translation) for controlling the heater (3-1, 3-2; All Figures, [0010]-[0011], Machine Translation) based on a detected value of the radiation thermometer (5; All Figures, [0010]-[0011], Machine Translation; “pyrometer”; abstract) – claim 10. Applicant’s claim requirement of “for supplying the one or more gases” is a claim requirement of intended use in the pending apparatus claims. Further, it has been held that claim language that simply specifies an intended use or field of use for the invention generally will not limit the scope of a claim (Walter , 618 F.2d at 769, 205 USPQ at 409; MPEP 2106). Additionally, in apparatus claims, intended use must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim (In re Casey, 152 USPQ 235 (CCPA 1967); In re Otto , 136 USPQ 458, 459 (CCPA 1963); MPEP2111.02)

- iv. The device (All Figures, [0010]-[0011], Machine Translation) of claim 10, further comprising a support member (2,12; [0010]; Machine Translation) having a ring shape, wherein the support member (2,12; [0010]; Machine Translation) has a low thermal

conductivity (“cooled jacket”; [0011]; Machine Translation), blocks heat rays emitted from the heater (3-1, 3-2; All Figures, [0010]-[0011], Machine Translation) and supports the susceptor (4; All Figures, [0010]-[0011], Machine Translation) by contacting a peripheral part thereof, as claimed by claim 11

- v. The device (All Figures, [0010]-[0011], Machine Translation) of claim 10, wherein a gas is discharged from a lower end opening of said at least one of the gas injection holes (14; All Figures, [0010]-[0011], Machine Translation) to be diffused while the gas is falling toward an outside of the susceptor (4; All Figures, [0010]-[0011], Machine Translation) in the processing space (7; All Figures, [0010]-[0011], Machine Translation); and said at least one of the gas injection holes (14; All Figures, [0010]-[0011], Machine Translation) is spaced apart from a center of the shower head (volume between bottom of 14 and top of 8; Figure 1) such that a position of a main gas stream of the gas discharged from said at least one of the gas injection holes (14; All Figures, [0010]-[0011], Machine Translation) falls outside an outer circumference of the substrate (1; All Figures) on the susceptor (4; All Figures, [0010]-[0011], Machine Translation) when the gas stream reaches an identical horizontal level to that of an upper surface of the susceptor (4; All Figures, [0010]-[0011], Machine Translation), as claimed by claim 13. When the structure recited in the reference is substantially identical to that of the claims, claimed properties or functions are presumed to be inherent (In re Best, 562 F.2d 1252, 1255, 195 USPQ 430, 433 (CCPA 1977); MPEP 2112.01).
- vi. The device (All Figures, [0010]-[0011], Machine Translation) of claim 10, further comprising a temperature measuring device (15; All Figures, [0010], Machine

Translation) installed at the susceptor (4; All Figures, [0010]-[0011], Machine Translation) to measure a temperature thereof; and a temperature compensator (“thermoregulator”; not shown, [0010], Machine Translation) for correcting a setting temperature value of the susceptor (4; All Figures, [0010]-[0011], Machine Translation) based on difference (“so that the measured value may become predetermined temperature”; [0010], i.e. difference reduces to *zero*) between a detection value of the radiation thermometer (5; All Figures, [0010]-[0011], Machine Translation; “pyrometer”; abstract) and a target temperature (“predetermined value”; [0010], Machine Translation) value of the substrate (1; All Figures), as claimed by claim 15. Applicant’s claim requirement of “by performing dummy process by way of using a dummy substrate for correcting temperature” is a claim requirement of intended use in the pending apparatus claims. Further, it has been held that claim language that simply specifies an intended use or field of use for the invention generally will not limit the scope of a claim (Walter , 618 F.2d at 769, 205 USPQ at 409; MPEP 2106). Additionally, in apparatus claims, intended use must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim (In re Casey, 152 USPQ 235 (CCPA 1967); In re Otto , 136 USPQ 458, 459 (CCPA 1963); MPEP2111.02).

- vii. The device (All Figures, [0010]-[0011], Machine Translation) of claim 15, wherein the temperature measuring device (15; All Figures, [0010], Machine Translation) is a thermocouple (“thermocouple”; [0010], Machine Translation), as claimed by claim 16

- viii. The structure of claim 1, wherein the one or more gases is provided into the processing space (7; All Figures, [0010]-[0011], Machine Translation) through each of said at least one of the gas injection holes (14; All Figures, [0010]-[0011], Machine Translation), as claimed by claim 34. Applicant's claim requirement of "one or more gases is provided" is a claim requirement of intended use in the pending apparatus claims. Further, it has been held that claim language that simply specifies an intended use or field of use for the invention generally will not limit the scope of a claim (Walter , 618 F.2d at 769, 205 USPQ at 409; MPEP 2106). Additionally, in apparatus claims, intended use must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim (In re Casey, 152 USPQ 235 (CCPA 1967); In re Otto , 136 USPQ 458, 459 (CCPA 1963); MPEP 2111.02)
- ix. The device of claim 10, wherein the one or more gases is provided into the processing space (7; All Figures, [0010]-[0011], Machine Translation) through each of said at least one of the gas injection holes (14; All Figures, [0010]-[0011], Machine Translation), as claimed by claim 35. Applicant's claim requirement of "one or more gases is provided" is a claim requirement of intended use in the pending apparatus claims. Further, it has been held that claim language that simply specifies an intended use or field of use for the invention generally will not limit the scope of a claim (Walter , 618 F.2d at 769, 205 USPQ at 409; MPEP 2106). Additionally, in apparatus claims, intended use must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is

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capable of performing the intended use, then it meets the claim (In re Casey, 152 USPQ 235 (CCPA 1967); In re Otto, 136 USPQ 458, 459 (CCPA 1963); MPEP 2111.02)

- x. The structure of claim 1, wherein the gases includes a first gas and a second gas different from the first gas, the gas injection holes (14; All Figures, [0010]-[0011], Machine Translation) include first gas injection holes (left-side collection of 14; All Figures, [0010]-[0011], Machine Translation) and second gas injection holes (right-side collection of 14; All Figures, [0010]-[0011], Machine Translation) through which the first and the second gas are respectively introduced into the processing space (7; All Figures, [0010]-[0011], Machine Translation), and each of said at least one of the gas injection holes (14; All Figures, [0010]-[0011], Machine Translation) is included in the first gas injection holes (left-side collection of 14; All Figures, [0010]-[0011], Machine Translation), as claimed by claim 36. Applicant's claim requires of "a first gas and a second gas different from the first gas" are claim requirements of intended use in the pending apparatus claims. Further, it has been held that claim language that simply specifies an intended use or field of use for the invention generally will not limit the scope of a claim (Walter, 618 F.2d at 769, 205 USPQ at 409; MPEP 2106). Additionally, in apparatus claims, intended use must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim (In re Casey, 152 USPQ 235 (CCPA 1967); In re Otto, 136 USPQ 458, 459 (CCPA 1963); MPEP 2111.02).



- xi. The structure of claim 36, wherein the shower head (volume between bottom of 14 and top of 8; Figure 1) includes two divided head spaces (16,17; Figure1) into which the first gas and the second gas are introduced, respectively, the first gas introduced into one of head spaces (16; Figure1) is provided to the processing space (7; All Figures, [0010]-[0011], Machine Translation) through the first gas injection holes (left-side collection of 14; All Figures, [0010]-[0011], Machine Translation), and the second gas introduced into the other head space (17, Figure 1) is provided to the processing space (7; All Figures, [0010]-[0011], Machine Translation) through the second gas injection holes (right-side collection of 14; All Figures, [0010]-[0011], Machine Translation), as claimed by claim 37
- xii. The structure of claim 36, wherein the first gas is an assist gas, and the second gas is a processing gas, as claimed by claim 38. Applicant's claim requirement is a claim requirement of intended use in the pending apparatus claims. Further, it has been held that claim language that simply specifies an intended use or field of use for the invention generally will not limit the scope of a claim (Walter , 618 F.2d at 769, 205 USPQ at 409; MPEP 2106). Additionally, in apparatus claims, intended use must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim (In re Casey,152 USPQ 235 (CCPA 1967); In re Otto , 136 USPQ 458, 459 (CCPA 1963); MPEP2111.02).
- xiii. The device of claim 10, wherein the gases include a first gas and a second gas different from the first gas, the gas injection holes (14; All Figures, [0010]-[0011], Machine

Translation) include first gas injection holes (left-side collection of 14; All Figures, [0010]-[0011], Machine Translation) and second gas injection holes (right-side collection of 14; All Figures, [0010]-[0011], Machine Translation) through which the first and the second gas are respectively introduced into the processing space (7; All Figures, [0010]-[0011], Machine Translation), and each of said at least one of the gas injection holes (14; All Figures, [0010]-[0011], Machine Translation) is included in the first gas injection holes (left-side collection of 14; All Figures, [0010]-[0011], Machine Translation), as claimed by claim 39. Applicant's claim requirement of "wherein the gases include a first gas and a second gas different from the first gas" is a claim requirement of intended use in the pending apparatus claims. Further, it has been held that claim language that simply specifies an intended use or field of use for the invention generally will not limit the scope of a claim (Walter , 618 F.2d at 769, 205 USPQ at 409; MPEP 2106). Additionally, in apparatus claims, intended use must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim (In re Casey, 152 USPQ 235 (CCPA 1967); In re Otto , 136 USPQ 458, 459 (CCPA 1963); MPEP2111.02).

- xiv. The device of claim 39, wherein the shower head (volume between bottom of 14 and top of 8; Figure 1) includes two divided head spaces (16,17; Figure1) into which the first gas and the second gas are introduced respectively, the first gas introduced into one of head spaces (16,17; Figure1) is provided to the processing space (7; All Figures, [0010]-[0011], Machine Translation) through the first gas injection holes (left-side collection of

14; All Figures, [0010]-[0011], Machine Translation), and the second gas introduced into the other head space is provided to the processing space (7; All Figures, [0010]-[0011], Machine Translation) through the second gas injection holes (right-side collection of 14; All Figures, [0010]-[0011], Machine Translation), as claimed by claim 40.

- xv. The device of claim 39, wherein the first gas is an assist gas, and the second gas is a processing gas, as claimed by claim 41. Applicant's claim requirement is a claim requirement of intended use in the pending apparatus claims. Further, it has been held that claim language that simply specifies an intended use or field of use for the invention generally will not limit the scope of a claim (Walter , 618 F.2d at 769, 205 USPQ at 409; MPEP 2106). Additionally, in apparatus claims, intended use must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim (In re Casey, 152 USPQ 235 (CCPA 1967); In re Otto , 136 USPQ 458, 459 (CCPA 1963); MPEP2111.02).
- xvi. The device of claim 21, wherein a gas species constituting the additional gas is different from that of the processing gas, as claimed by claim 44. Applicant's claim requirement is a claim requirement of intended use in the pending apparatus claims. Further, it has been held that claim language that simply specifies an intended use or field of use for the invention generally will not limit the scope of a claim (Walter , 618 F.2d at 769, 205 USPQ at 409; MPEP 2106). Additionally, in apparatus claims, intended use must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is

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capable of performing the intended use, then it meets the claim (In re Casey, 152 USPQ 235 (CCPA 1967); In re Otto, 136 USPQ 458, 459 (CCPA 1963); MPEP 2111.02).

Watanabe does not teach at least one light introducing rod of a radiation thermometer (5; All Figures, [0010]-[0011], Machine Translation; “pyrometer”; abstract) inserted through at least one of the gas injection holes (14; All Figures, [0010]-[0011], Machine Translation) wherein at least one of the one or more gases is supplied to the processing space (7; All Figures, [0010]-[0011], Machine Translation) through said at least one of the gas injection holes (14; All Figures, [0010]-[0011], Machine Translation) through which said at least one light introducing rod is inserted – claim 1, 10. However, Applicant’s claim requirement of “wherein at least one of the one or more gases is supplied to the processing space” is a claim requirement of intended use in the pending apparatus claims. Further, it has been held that claim language that simply specifies an intended use or field of use for the invention generally will not limit the scope of a claim (Walter, 618 F.2d at 769, 205 USPQ at 409; MPEP 2106). Additionally, in apparatus claims, intended use must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim (In re Casey, 152 USPQ 235 (CCPA 1967); In re Otto, 136 USPQ 458, 459 (CCPA 1963); MPEP 2111.02).

Watanabe further does not teach:

- i. The structure of claim 1, wherein the shower head (volume between bottom of 14 and top of 8; Figure 1) includes a gas injection surface (lowest surface of 6; All Figures, [0010]-[0011], Machine Translation) where the gas injection holes (14; All Figures, [0010]-[0011], Machine Translation) are provided and one of said at least one light introducing

rod is inserted through a gas injection hole (14 accomodating radiation from 5; Figure 1) located at a substantially central part of the gas injection surface (lowest surface of 6; All Figures, [0010]-[0011], Machine Translation), as claimed by claim 2

- ii. The structure of claim 1, wherein the shower head (volume between bottom of 14 and top of 8; Figure 1) includes a gas injection surface (lowest surface of 6; All Figures, [0010]-[0011], Machine Translation) where the gas injection holes (14; All Figures, [0010]-[0011], Machine Translation) are provided and two or more light introducing rods are inserted through a number of gas injection holes (14; All Figures, [0010]-[0011], Machine Translation), respectively, which are arranged along a radial direction of the gas injection surface (lowest surface of 6; All Figures, [0010]-[0011], Machine Translation) and at least one of which is located at a substantially central part of the gas injection surface (lowest surface of 6; All Figures, [0010]-[0011], Machine Translation), as claimed by claim 3
- iii. The structure of claim 1, wherein an opening area of a gas injection hole (14 accomodating radiation from 5; Figure 1) through which each of said at least one light introducing rod is inserted is larger than an opening area of a gas injection hole (14 accomodating radiation from 5; Figure 1) through which no light introducing rod is inserted by a cross sectional area of said at least one light introducing rod, an identical gas being injected through the gas injection hole (14 accomodating radiation from 5; Figure 1) and said another gas injection hole (14 accomodating radiation from 5; Figure 1), as claimed by claim 5

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- iv. The structure of claim 1, wherein the gases include an assist gas and a source gas, and the gas injection holes (14; All Figures, [0010]-[0011], Machine Translation) include assist gas injection holes (14; All Figures, [0010]-[0011], Machine Translation) and source gas injection holes (14; All Figures, [0010]-[0011], Machine Translation) through which the assist and the source gas are respectively introduced to the processing space (7; All Figures, [0010]-[0011], Machine Translation) the shower head (volume between bottom of 14 and top of 8; Figure 1) being configured such that the assist gas and the source gas are prevented from being mixed with each other therein, as claimed by claim 8. Applicant's claim requirement of "the gases include an assist gas and a source gas" is a claim requirement of intended use in the pending apparatus claims. Further, it has been held that claim language that simply specifies an intended use or field of use for the invention generally will not limit the scope of a claim (Walter , 618 F.2d at 769, 205 USPQ at 409; MPEP 2106). Additionally, in apparatus claims, intended use must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim (In re Casey, 152 USPQ 235 (CCPA 1967); In re Otto , 136 USPQ 458, 459 (CCPA 1963); MPEP 2111.02).
- v. at least one light introducing rod of a radiation thermometer (5; All Figures, [0010]-[0011], Machine Translation; "pyrometer"; abstract) inserted through at least one of the gas injection holes (14; All Figures, [0010]-[0011], Machine Translation) – claim 10
- vi. The device (All Figures, [0010]-[0011], Machine Translation) of claim 10, wherein an inert gas is introduced to said at least one of gas injection holes (14; All Figures, [0010]-

[0011], Machine Translation) through which said at least one light introducing rod of the radiation thermometer (5; All Figures, [0010]-[0011], Machine Translation; “pyrometer”; abstract) is inserted, as claimed by claim 14. Applicant’s claim requirement of “wherein an inert gas is introduced” is a claim requirement of intended use in the pending apparatus claims. Further, it has been held that claim language that simply specifies an intended use or field of use for the invention generally will not limit the scope of a claim (Walter , 618 F.2d at 769, 205 USPQ at 409; MPEP 2106). Additionally, in apparatus claims, intended use must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim (In re Casey, 152 USPQ 235 (CCPA 1967); In re Otto , 136 USPQ 458, 459 (CCPA 1963); MPEP2111.02).

- vii. The device (All Figures, [0010]-[0011], Machine Translation) of claim 10, further comprising an isolation ring, installed on an upper side of a peripheral part of the susceptor (4; All Figures, [0010]-[0011], Machine Translation) for blocking heat rays, as claimed by claim 12
- viii. The device of claim 21, wherein the heat ray introducing passage (14 accommodating radiation from 5; Figure 1) is separated<sup>1</sup> from the space formed inside the shower head (volume between bottom of 14 and top of 8; Figure 1) such that the additional gas and the processing gas are supplied to the processing space (7; All Figures, [0010]-[0011], Machine Translation) from the shower head (volume between bottom of 14 and top of 8; Figure 1) without being mixed, as claimed by claim 42

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- ix. The device of claim 21, wherein the radiation thermometer (5; All Figures, [0010]-[0011], Machine Translation; “pyrometer”; abstract) is attached to the shower head (volume between bottom of 14 and top of 8; Figure 1), as claimed by claim 43
- x. The device of claim 44, wherein the heat ray introducing passage (14 accommodating radiation from 5; Figure 1) is separated<sup>1</sup> from the space formed inside the shower head (volume between bottom of 14 and top of 8; Figure 1) such that the additional gas and the processing gas are supplied to the processing space (7; All Figures, [0010]-[0011], Machine Translation) from the shower head (volume between bottom of 14 and top of 8; Figure 1) without being mixed, as claimed by claim 45
- xi. The structure of claim 1, wherein the at least one light introducing rod does not contact an inner peripheral wall of the at least one gas injection hole through which the at least one light introducing rod is inserted, as claimed by claim 46

Moslehi teaches a wafer processing apparatus (Figure 22) including one light transmitting rod (604; Figure 22) inserted through Moslehi's gas injection showerhead (602; Figure 22). Moslehi further teaches independent, unmixed, gas injection conduits (112, 114, 116; Figure 1) for injecting gases into three independent zones (118, 120, 122; Figure 1; column 7; lines 13-33).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to add Moslehi's light transmitting rod (604; Figure 22) and independent gas paths to Watanabe's apparatus, further, to attach Watanabe's radiation thermometer (5; All Figures, [0010]-[0011], Machine Translation; “pyrometer”; abstract) to Watanabe's shower head (volume between bottom of 14 and top of 8; Figure 1).



Motivation to add Moslehi's light transmitting rod (604; Figure 22) and independent gas paths to Watanabe's apparatus is for process monitoring and control as taught by Moslehi (column 23; lines 39-49), and for processing spatial control (column 18; lines 61-67).

Motivation to attach Watanabe's radiation thermometer (5; All Figures, [0010]-[0011], Machine Translation; "pyrometer"; abstract) to Watanabe's shower head (volume between bottom of 14 and top of 8; Figure 1) is so that Watanabe's radiation thermometer does not fall to the floor.

8. Claim 26 is rejected under 35 U.S.C. 103(a) as being unpatentable over Watanabe et al (JP 06204143 A) in view of Tanaka, Sumi et al. (US 20040020599 A1). Watanabe is discussed above. Watanabe does not teach:

- i. The device (All Figures, [0010]-[0011], Machine Translation) of claim 21, further comprising an isolation ring, installed on an upper side of a peripheral part of the susceptor (4; All Figures, [0010]-[0011], Machine Translation), for blocking heat rays, as claimed by claim 26

Tanaka teaches a wafer processing apparatus (Figure 6) for wafer processing including an white colored aluminum nitride isolation ring (402; Figure 2; [0020]), installed at an upper side on the peripheral part of the susceptor (403; Figure 2).

It would have been obvious to one of ordinary skill in the art at the time the invention was made for Watanabe to add Tanaka's isolation ring.

Motivation for Watanabe to add Tanaka's isolation ring is to secure Watanabe's wafer as taught by Tanaka ([0020]).

9. Claim 24 is rejected under 35 U.S.C. 103(a) as being unpatentable over Watanabe et al (JP 06204143 A). Watanabe is discussed above. Watanabe does not teach the device (All

Figures, [0010]-[0011], Machine Translation) of claim 21, wherein a distance between a lower surface of the shower head (volume between bottom of 14 and top of 8; Figure 1) and an upper surface of the susceptor (4; All Figures, [0010]-[0011], Machine Translation) is in a range from 20 mm to 30 mm, and a flow rate of the gas introduced through the heat ray introducing passage (14 accommodating radiation from 5; Figure 1) is in a range from 3 sccm to 100 sccm, as claimed by claim 24. Applicant's claim requirement of "a flow rate of the inert gas is in a range from 3 sccm to 100 sccm" is a claim requirement of intended use in the pending apparatus claims. Further, it has been held that claim language that simply specifies an intended use or field of use for the invention generally will not limit the scope of a claim (Walter , 618 F.2d at 769, 205 USPQ at 409; MPEP 2106). Additionally, in apparatus claims, intended use must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim (In re Casey, 152 USPQ 235 (CCPA 1967); In re Otto , 136 USPQ 458, 459 (CCPA 1963); MPEP 2111.02).

It would have been obvious to one of ordinary skill in the art at the time the invention was made for Watanabe to optimize the dimension(s) and/or relative position of Watanabe's apparatus.

Motivation for Watanabe to optimize the dimension(s) and/or relative position of Watanabe's apparatus is for optimizing processing and/or accommodating wafers of varying size and shapes. It is well established that changes in apparatus dimensions are within the level of ordinary skill in the art. (Gardner v. TEC Systems, Inc. , 725 F.2d 1338, 220 USPQ 777 (Fed. Cir. 1984), cert. denied , 469 U.S. 830, 225 USPQ 232 (1984); In re Rose , 220 F.2d 459, 105 USPQ 237 (CCPA 1955); In re Rinehart, 531 F.2d 1048, 189 USPQ 143 (CCPA 1976); See MPEP 2144.04). It is

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well established that the rearrangement of parts is considered obvious to those of ordinary skill (In re Japikse , 181 F.2d 1019, 86 USPQ 70 (CCPA 1950); In re Kuhle , 526 F.2d 553, 188 USPQ 7 (CCPA 1975); Ex parte Chicago Rawhide Manufacturing Co. , 223 USPQ 351, 353 (Bd. Pat. App. & Inter. 1984).; MPEP 2144.04).

10. Claims 6-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Watanabe et al (JP 06204143 A) in view of Moslehi; Mehrdad M. (US 5846883 A) and Kawada; Hiroki et al. (US 5536359 A). Watanabe and Moslehi are discussed above. Watanabe and Moslehi do not teach:

- i. The structure of claim 1, further comprising an elevator for moving the light introducing rod up and down, wherein the elevator selectively retreats the light introducing rod from said at least one of the gas injection holes (14; All Figures, [0010]-[0011], Machine Translation) through which the light introducing rod is inserted, as claimed by claim 6
- ii. The structure of claim 6, further comprising a separation mechanism for selectively closing said at least one of the gas injection holes (14; All Figures, [0010]-[0011], Machine Translation) through which the light introducing rod is inserted, as claimed by claim 7

Kawada teaches a retractable radiation transmission rod (19; Figures 3(a,b); column 6; lines 13-24) including a separation mechanism (23; Figures 3(a,b); column 7; lines 45-56) for selectively closing the radiation transmission rod's conduit (22; Figures 3(a,b); column 7; lines 45-56).

It would have been obvious to one of ordinary skill in the art at the time the invention was made for Watanabe and Moslehi to add Kawada's radiation transmission rod control means.

Motivation for Watanabe and Moslehi to add Kawada's radiation transmission rod control means is for protecting the apparatus from corrosive environments as taught by Kawada (column 7; lines 45-56).

***Response to Arguments***

11. Applicant's arguments with respect to claims 36-45 have been considered but are moot in view of the new grounds of rejection.

12. Applicant's arguments filed May 12, 2008 have been fully considered but they are not persuasive.

13. Applicant states:

“

However, in both Watanabe and Moslehi, there is no suggestion that it would be preferable to insert the light introducing rod through the gas injection hole of the shower head. Moreover, Watanabe and Moslehi both fail to disclose that a gas is supplied to the processing space through a gas injection hole through which a light introducing rod is inserted.

“

14. In response to applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, the Examiner believes that he has provided a showing of teachings of the

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prior art including suggestions and motivation to do so found directly in the references themselves and in the knowledge generally available to one of ordinary skill in the art:

“

Motivation to add Moslehi's light transmitting rod (604; Figure 22) and independent gas paths to Watanabe's apparatus is for process monitoring and control as taught by Moslehi (column 23; lines 39-49), and for processing spatial control (column 18; lines 61-67).

“

With respect to claim 5, Applicant states:

“

However, Watanabe and Moslehi do not suggest the above-noted limitation of Claim 5. On page 12, the outstanding Office Action points to Fig. 1 of Watanabe for the above-noted feature. Neither Fig. 6 nor anywhere else in Watanabe suggests a spatial relationship between an opening area through which a light rod is inserted and another gas injection hole. Indeed, when one reference, Moslehi, is cited for a light introducing rod, and a second reference, Watanabe is cited for a showerhead with gas injection holes, any proper combination of Watanabe and Moslehi would be devoid of the particular spatial relationship between the light introducing rod and the area of the injection hole recited in dependent claim 5.

“

15. In response, the Examiner agrees that neither Watanabe or Moslehi alone teaches the dependent claim limitation of claim 5, however, the Examiner's proposed rejection is based on plural references. In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based

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on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). The Examiner's proposed rejection states "it would ... to add Moslehi's light transmitting rod (604; Figure 22) and independent gas paths to Watanabe's apparatus". Thus the *combination* makes Applicant's dependent claim 5 obvious under the cited motivation and allows those skilled artisans to allow for the threshold dimensional tolerance claimed in claim 5.

16. The remainder of Applicant's arguments at pages 14-16 are based on the Examiner's prior action. Applicant's amendments of May 12, 2006 necessitated a reassessment of Watanabe et al (JP 06204143 A) as discussed above.

***Conclusion***

17. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. US 6758941 B1.

18. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Rudy Zervigon whose telephone number is (571) 272-1442. The examiner can normally be reached on a Monday through Friday schedule from 9am through 5pm. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300. Any Inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Chemical and Materials Engineering art unit receptionist at (571) 272-1700. If the examiner can not be reached please contact the examiner's supervisor, Parviz Hassanzadeh, at (571) 272- 1435

/Rudy Zervigon/

Primary Examiner, Art Unit 1792